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- ~~670.~~ The plate system of claim ~~621~~<sup>87</sup>, wherein at least a portion of said lower surface of said plate includes a bone ingrowth surface.
- 108 ~~674.~~ The plate system of claim ~~630~~<sup>108</sup>, in combination with an interbody implant.
- 109 ~~672.~~ The plate system of claim ~~630~~<sup>109</sup>, in combination with a bone graft.
- 104 ~~673.~~ The plate system of claim ~~635~~<sup>103</sup>, wherein said fusion promoting substance is at least in part bone.
- 110 ~~674.~~ The plate system of claim ~~630~~<sup>110</sup>, wherein at least a portion of said lower surface comprises a bone ingrowth material.
- 111 ~~675.~~ The plate system of claim ~~630~~<sup>111</sup>, wherein at least a portion of said lower surface of said plate includes a bone ingrowth surface.
- 120 ~~676.~~ The plate system of claim ~~639~~<sup>118</sup>, in combination with an interbody implant.
- 121 ~~677.~~ The plate system of claim ~~639~~<sup>118</sup>, in combination with a bone graft.
- 116 ~~678.~~ The plate system of claim ~~644~~<sup>115</sup>, wherein said fusion promoting substance is at least in part bone.
- 122 ~~679.~~ The plate system of claim ~~639~~<sup>112</sup>, wherein at least a portion of said lower surface comprises a bone ingrowth material.
- 123 ~~680.~~ The plate system of claim ~~639~~<sup>112</sup>, wherein at least a portion of said lower surface of said plate includes a bone ingrowth surface.--.

### REMARKS

Prior to further examination, Applicant has amended claims 538, 563, 566, 591, 594, 609, 610, 621, 628, 630, 637, 639, and 646, and added new claims 648-680 to

further define applicant's claimed invention. It is respectfully requested that this Amendment be entered and the claims allowed.

If there are any fees due in connection with the filing of this Amendment, please charge the fee to our Deposit Account 50-1066.

Respectfully submitted,

MARTIN & FERRARO, LLP

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14500 Avion Parkway, Suite 300  
Chantilly, Virginia 20151-1101  
Telephone: (703) 679-9300  
Facsimile: (703) 670-9303

By: 

Thomas H. Martin  
Registration No. 34,383

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CHANGES TO THE CLAIMS

538. (Twice Amended) A plate system adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate system comprising:

a plate having a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent cervical vertebral bodies, a lower surface for placement against the cervical vertebral bodies and an upper surface opposite said lower surface, said lower surface being concave along a substantial portion of the longitudinal axis of said plate, ~~and an upper surface opposite said lower surface;~~

at least two bone screws each having a central longitudinal axis and being adapted to engage each of the at least two cervical vertebral bodies, respectively, each of said bone screws having a leading end for insertion into the bone of the cervical vertebral bodies and a trailing end opposite said leading end, said trailing end having a top surface oriented toward said trailing end of said bone screw and a bottom surface opposite said top surface oriented toward said leading end of said bone screw;

at least two bone screw receiving holes extending through said plate from said upper surface through said lower surface, at least a first of said bone screw receiving holes associated with a first of the cervical vertebral bodies and at least a second of said bone screw receiving holes associated with a second of the cervical vertebral bodies; and

~~at least one locking element, each of said at least one locking element~~  
adapted to lock to said plate only a single one of said bone screws inserted in a  
single one of said at least two bone screw receiving holes, said locking element  
adapted to be coupled to said plate prior to the insertion of said bone screw to be  
locked by said locking element into said one of said bone screw receiving holes,  
said locking element being moveable from an initial position that permits the  
insertion of said bone screw into said one of said bone screw receiving holes to a  
final position that is adapted to extend over at least a portion of said top surface  
of said bone screw inserted in said one of said bone screw receiving holes.

23/ 563. (Twice Amended) The plate system of claim 561, wherein said fusion promoting  
substance ~~comprises~~ includes at least one of bone morphogenetic protein,  
hydroxyapatite, and hydroxyapatite tricalcium phosphate.

32/ 566. (Twice Amended) A plate adapted for use in the anterior human cervical spine for  
contacting the anterior aspect of at least two cervical vertebral bodies, said plate  
comprising:

a longitudinal axis and a length sufficient to span a disc space and overlap  
portions of at least two adjacent cervical vertebral bodies, a lower surface for  
placement against the cervical vertebral bodies and an upper surface opposite  
said lower surface, said lower surface being concave along a substantial portion  
of the longitudinal axis of said plate, ~~and an upper surface opposite said lower~~  
~~surface;~~

at least two bone screw receiving holes extending through said plate from  
said upper surface through said lower surface, at least a first of said bone screw

receiving holes associated with a first of the cervical vertebral bodies and at least a second of said bone screw receiving holes associated with a second of the cervical vertebral bodies, each of said bone screw receiving holes being adapted to receive a single bone screw to attach said plate to the cervical spine; and

a-at least one locking element, each of said at least one locking element adapted to lock to said plate only a single bone screw inserted in one of said at least two bone screw receiving holes, said locking element adapted to be coupled to said plate prior to the insertion of the bone screw to be locked by said locking element into said bone screw receiving hole, said locking element being moveable from an initial position that permits the insertion of said bone screw into said one of said bone screw receiving holes to a final position that is adapted to extend over at least a portion of said one of said bone screw receiving holes into which the single bone screw is to be inserted.

56/ 591. (Amended) The plate of claim 589, wherein said fusion promoting substance ~~comprises~~ includes at least one of bone morphogenetic protein, hydroxyapatite, and hydroxyapatite tricalcium phosphate.

64/ 594. (Twice Amended) A plate adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate comprising:

a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent cervical vertebral bodies, a lower surface for placement against the cervical vertebral bodies and an upper surface opposite said lower surface, said lower surface being concave along a substantial portion

of the longitudinal axis of said plate, ~~and an upper surface opposite said lower surface;~~

at least two bone screw receiving holes extending through said plate from said upper surface through said lower surface, at least a first of said bone screw receiving holes associated with a first of the cervical vertebral bodies and at least a second of said bone screw receiving holes associated with a second of the cervical vertebral bodies, each of said bone screw receiving holes being adapted to receive a single bone screw to attach said plate to the cervical spine; and

said plate having ~~a~~ at least one non-detachable locking portion, each of said at least one locking portion adapted to lock to said plate only a single bone screw inserted in one of said at least two bone screw receiving holes, said locking portion being moveable from an initial position that permits the insertion of the bone screw to be locked by said locking ~~element~~ portion into said one of said bone screw receiving holes to a final position that is adapted to extend over at least a portion of said one of said bone screw receiving holes to retain the bone screw to said plate.

66/609. (Amended) The plate of claim 607, wherein said fusion promoting substance ~~comprises~~ includes at least one of bone morphogenetic protein, hydroxyapatite, and hydroxyapatite tricalcium phosphate.

67/610. (Amended) The plate of claim 594, further comprising bone screws for engaging said plate to the cervical spine, wherein at least a portion of one of said plate, said locking ~~element~~ portion, and said bone screws is a bioresorbable material.

621. (Twice Amended) A plate system adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate system comprising:

a plate having a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent cervical vertebral bodies, a lower surface for placement against the cervical vertebral bodies and an upper surface opposite said lower surface, said lower surface being concave along a substantial portion of the longitudinal axis of said plate, ~~and an upper surface opposite said lower surface;~~

at least two bone screws each having a central longitudinal axis and being adapted to engage each of the at least two cervical vertebral bodies, respectively, each of said bone screws having a leading end for insertion into the cervical spine and a trailing end opposite said leading end, at least one of said bone screws including proximate said trailing end a contact surface area generally transverse to the central longitudinal axis of said bone screw;

at least two bone screw receiving holes extending through said plate from said upper surface through said lower surface, at least a first of said bone screw receiving holes associated with a first of the cervical vertebral bodies and at least a second of said bone screw receiving holes associated with a second of the cervical vertebral bodies, each of said bone screw receiving holes having a central longitudinal axis and being adapted to receive one of said bone screws to attach said plate to the cervical spine; and

a-at least one locking element, each of said at least one locking element  
adapted to lock to said plate only one of said bone screws inserted in one of said  
bone screw receiving holes, each of said at least one locking element contacting  
said generally transverse contact surface area of said a respective one of said  
bone screws so as to retain said one of said bone screws to said plate.

94 / 628. (Twice Amended) The plate system of claim 626, wherein said fusion promoting  
substance ~~comprises~~ includes at least one of bone morphogenetic protein,  
hydroxyapatite, and hydroxyapatite tricalcium phosphate.

100 / 630. (Twice Amended) A plate system adapted for use in the anterior human cervical  
spine for contacting the anterior aspect of at least two cervical vertebral bodies,  
said plate system comprising:

a plate having a longitudinal axis and a length sufficient to span a disc  
space and overlap portions of at least two adjacent cervical vertebral bodies, a  
lower surface for placement against the cervical vertebral bodies and an upper  
surface opposite said lower surface, said lower surface being concave along a  
substantial portion of the longitudinal axis of said plate, ~~and an upper surface~~  
~~opposite said lower surface~~;

at least two bone screws each having a central longitudinal axis and being  
adapted to engage each of the at least two cervical vertebral bodies,  
respectively, each of said bone screws having a leading end for insertion into the  
cervical spine and a trailing end opposite said leading end, at least one of said  
bone screws including proximate said trailing end a maximum cross sectional  
dimension transverse to the central longitudinal axis of said bone screw, said



bone screw having a contact surface area at the maximum cross sectional dimension, said contact surface area having a generally flat portion;

at least two bone screw receiving holes extending through said plate from said upper surface through said lower surface, at least a first of said bone screw receiving holes associated with a first of the cervical vertebral bodies and at least a second of said bone screw receiving holes associated with a second of the cervical vertebral bodies, each of said bone screw receiving holes having a central longitudinal axis and being adapted to receive one of said bone screws to attach said plate to the cervical spine; and

~~a~~ at least one locking element, each of said at least one locking element adapted to lock to said plate only one of said bone screws inserted in one of said bone screw receiving holes, each of said at least one locking element adapted to contact said generally flat portion of said contact surface area of said ~~a~~ respective one of said bone screws so as to retain said one of said bone screws to said plate.

106/ 637. (Twice Amended) The plate system of claim 635, wherein said fusion promoting substance ~~comprises~~ includes at least one of bone morphogenetic protein, hydroxyapatite, and hydroxyapatite tricalcium phosphate.

112/ 639. (Twice Amended) A plate system adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate system comprising:

a plate having a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent cervical vertebral bodies, a

lower surface for placement against the cervical vertebral bodies and an upper surface opposite said lower surface, said lower surface being concave along a substantial portion of the longitudinal axis of said plate, ~~and an upper surface opposite said lower surface;~~

at least two bone screws each having a central longitudinal axis and being adapted to engage each of the at least two cervical vertebral bodies, respectively, each of said bone screws having a leading end for insertion into the cervical spine and a trailing end opposite said leading end, said trailing end including a lower surface generally transverse to the central longitudinal axis of said screw;

at least two bone screw receiving holes extending through said plate from said upper surface through said lower surface, at least a first of said bone screw receiving holes associated with a first of the cervical vertebral bodies and at least a second of said bone screw receiving holes associated with a second of the cervical vertebral bodies, each of said bone screw receiving holes has a seat, said seat having a surface being at least in part flat and adapted to contact said lower surface of one of said bone screws; and

~~a~~ at least one locking element, each of said at least one locking element adapted to lock to said plate only one of said bone screws inserted in one of said at least two bone screw receiving holes, each of said at least one locking element contacting at least a portion of ~~said a~~ respective one of said bone screws so as to retain ~~said one of said bone screws~~ to said plate.

118/646. (Twice Amended) The plate system of claim 644, wherein said fusion promoting substance ~~comprises~~ includes at least one of bone morphogenetic protein, hydroxyapatite, and hydroxyapatite tricalcium phosphate.